

REMARKS / ARGUMENTS

Summary of Amendments

Applicants have amended the claims such that all claims include a range of temperatures for the water washing step. Specifically, the claims have the following water washing temperature ranges: Claims 11-22, 24-31 - about 60°C to about 93°C; Claims 23 and 40-46 - about 77°C to about 93°C; and Claim 47 – about 88°C to about 93°C. Support for these ranges is at p. 8 of the specification. No new matter is presented by these amendments.

Applicants have also amended Claim 12 to depend from Claim 11 instead of cancelled Claim 1.

The Rejection under 35 U.S.C. § 112, Second Paragraph

The rejection of Claim 12 as not having antecedent basis is obviated by the amendment to claim pendency to Claim 11 instead of cancelled Claim 1.

The Rejections under 35 U.S.C. § 103(a)

Before addressing the Examiner's specific rejections, the following table summarizes the key method steps described by the primary reference cited by the Examiner (Klok) and the steps in Applicants' claimed process. The table's contents are discussed with respect to the separate Section 103 rejections.

Klok	Applicants
1. First Esterification Reaction: Fatty acid glycerolesters reacted with monohydric loweralkylalcohol to provide: -fatty acid lower-alkyl mono-esters (desired product) -fatty acid glycerolesters (impurities difficult to separate from desired lower alkyl esters) -glycerol (impurity readily separated from desired lower alkyl esters)	1. Esterification: React source fatty acids (e.g., fatty acid glycerol esters) and monohydric alcohol to produce fatty acid lower alkyl esters (desired) and by-products (e.g., fatty acid glycerol esters, glycerol)
2. Separation: Layers (a) glycerol rich layer (discarded) and (b) fatty acid lower alkyl monoester rich layer (desired product) that also includes fatty acid glycerolesters (impurity) are separated.	

3(a). Second Esterification Reaction: Fraction (b) from 2 is further esterified to provide corresponding fatty acid glycerol triesters. (More readily separated from desired fatty acid lower alkyl monoesters via subsequent distillation due to separation efficiency.)	
3(b). Removal of Soap and Catalyst: Fraction (b) is subjected to “conventional water washing and filtration steps” to remove soap and catalyst (Col. 5, lines 39-46.)	2. Water Washing: Wash the product mixture from 1 with water at elevated temperature (about 60°C to about 93°C; about 77°C to about 93°C; or about 88°C to about 93°C) and pressure and discard water phase.
4. Distillation: Due to improved separation efficiency between desired loweralkyl monoesters and undesired triglycerides, higher purity fatty acid lower alkyl monoesters are obtained.	3. Distillation: Fractionally distill the remaining fatty acid lower alkyl esters contained in oil phase

1. Obviousness Rejection Over Klok Alone

The Examiner maintains the prior rejection of Claims 11-13, 17-18, and 20 under 35 U.S.C. § 103 as being obvious over European Patent Application 391,485 by Klok et al. (hereafter “Klok”).

The Examiner rejects these claims as being obvious over Klok, stating at page 3 of the Action that

Applicants argue that the reference fail [sic] to show certain features of applicant’s invention, such as elevated pressure. However, ‘elevated’ is a relative term and since no range is given for pressure, it is open to interpretation. The elevated temperatures that applicants refer to in dependent claim 23, one could not possibly consider elevated since 760 mgHg is atmospheric. Therefore Klok would read on the instant invention because the water washing step is conducted at atmospheric pressure.

Although Applicants are unclear as to the Examiner’s position in terms of the reference to elevated temperature vis a vis Claim 23, the position seems to be that both the temperature and pressure ranges previously included in Claim 23 (and Claims 11 et seq.) are basically room temperature and atmospheric pressure (at least insofar as the

“from about 760 mgHg” aspect is concerned). As such, per the Examiner’s view, the claims presented actually read on conditions that were not elevated in either regard.

Applicants submit that the claims as amended do clearly require water washing at “elevated” temperatures. As mentioned, all claims require that water washing occur in one of the following ranges: about 60°C to about 93°C; about 77°C to about 93°C; or about 88°C to about 93°C.

As can be seen from the table above and with reference to Klok, the only discussion concerning water washing is in Step 3(b), where the product from the second esterification reaction is subjected to “conventional” water washing and filtration steps. In the general discussion by Klok, the only reference to water washing is at Col. 5, lines 43-46. Later, in Example 1, Klok states that “[t]he mixture [from the second esterification reaction] was then washed with about 3.5 L of demineralized water at 40°C.” (Example II is similar, but provides that 190 L of water at 40°C was used.)

Based on a fair reading of Klok, there is no suggestion that higher temperature conditions for the water washing step would result in higher purity fatty acid lower alkyl esters. Applicants therefore submit that the current amendments to the claims obviate the Examiner’s grounds for rejecting Claims 11-13, 17-18, and 20 over Klok alone. Moreover, the arguments provided below in response to the Examiner’s grounds for rejecting Claims 11-15, 17-18, 20-24, 28-30, 40-41, 45 and 47 over Klok in view of a second reference are also relevant to this aspect of the Examiner’s rejection.

2. Obviousness Rejection Over Klok in view of Kenneally

The Examiner rejects Claims 11-15, 17-18, 20-24, 28-30, 40-41, 45 and 47 under 35 U.S.C. § 103 as being obvious over Klok in view of US Patent No. 5,491,226 to Kenneally et al. (“Kenneally”). The only reliance on Kenneally appears to be with regard to the use of fatty acid lower alkyl esters to make polyol polyesters. As such, the focus of Applicants’ rebuttal will be on the rejection over Klok.

In this aspect of the rejection, the Examiner states that

Klok (US’546) discloses a process of preparing fatty acid lower alkyl esters wherein esters are formed via esterification, by-products separated via conventional water washing, the water-washed ester produces [sic] is distilled to produce an ester product of at least 98%, and acid value less than 10, under elevated temperatures...The claims differ from the

reference by stating that the washing step is conducted under elevated pressure, a temperature range for the distillation step and that the esters are then used to make fatty acid polyol polyesters.

However, it would have been obvious to one of ordinary skill in the art to modify the pressure of the washing step. Also it should be noted that the entire process is conducted under pressure in closed systems there [sic] one can extrapolate that washing step is conducted under elevated pressure also.

(Emphasis added.)

With respect to the first aspect of the rejection, Applicants note that the claims now differ from Klok's disclosure by requiring that the water wash step be conducted at a temperature of at least about 60°C, which is significantly higher than the 40°C temperature of Klok's examples. There is no suggestion in Klok that such elevated temperatures would enhance the purity of the fatty acid lower alkyl esters at the end of Applicants' claimed process.

Applicants further submit that given the focus of Klok's disclosure (i.e., a second esterification step that converts the impurities contained with the desired fatty acid lower alkyl esters so the former are more readily removed in the subsequent distillation step), one of skill in the art would not look to this reference for teachings around improving purity by modifying the conditions of the washing step. There is little attention paid to washing, as is evidenced by Klok's indication that "conventional" conditions can be used in this step.

In the second paragraph cited above, the Examiner continues to contend that the entire process described by Klok is conducted in a closed system and that therefore elevated pressures are assumed for the washing step. Applicants again submit that Klok does not indicate that all the requisite steps are conducted under closed system conditions. The text at Col. 3, lines 44-49, of Klok provides that the reaction (specifically the first esterification reaction) may be carried out in a closed reaction vessel to maintain desired temperature and pressure conditions. This by no means suggests that all other steps, including the water washing step, should be conducted under such conditions. As such, Applicants again submit that Klok does not teach that water washing could beneficially be conducted at elevated pressures.

Applicants' claims now require that washing be conducted at a temperature of at least about 60°C and at elevated pressures. Neither, let alone both, of these elements is taught by Klok as modified by Keannelly.

Based on the foregoing, Applicants request the withdrawal of the Section 103 rejection of Claims 11-15, 17-18, 20-24, 28-30, 40-41, 45 and 47 over Klok in view of Kenneally.

CONCLUSION

Applicants have amended the claims to address the Examiner's Section 112 rejection of Claim 12 and to address the Examiner's Section 103 rejections of certain claims. For all the foregoing reasons, Applicants respectfully request withdrawal of the remaining rejections and the allowance of the claims. If the Examiner believes that personal contact would be advantageous to the disposition of this case, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,

Carl J. Roof
Carl J. Roof
Attorney for Applicants
Registration No. 37,708
(513) 634-5209

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Customer No. 27752